REMARKS/ARGUMENTS

Claims 1-15 are active in the case. Reconsideration is respectfully requested.

The present invention relates to a very hard coated film that has a low refractive index.

Claim Rejection, 35 USC 102 & 35 USC 103

Claims 1-3 stand rejected based on 35 USC 103(a) as obvious over Nogami et al, U. S. Patent 5,800,926 in view of Crompton OSi. This ground of rejection is respectfully traversed.

As has previously been discussed on the record, the Nogami et al patent is related to the presently claimed invention, because it discloses a fluid composition that is prepared by mixing a trialkoxy perfluoroalkylethyl silane compound and a tetraalkoxysilane in an alcohol solvent. The fluid material obtained is used to prepare coated films that are said to be water repellent and to have a low refractive index. The four component coating fluid of the present invention, on the other hand, contains the same three components of the coating fluid of Nogami et al, but in addition contains a ureidoalkyltrialkoxysilane compound which is not disclosed in the patent. Reactants (A) and (B) correspond to reactants (A) and (B) of the present claims. It has been maintained that the failure of the patent to show or suggest the additional presence of a ureidoalkyltrialkoxysilane compound is a critical omission in light of the fact that the presence of the compound, even in small amounts, in the reaction mixture results in a coated film that maintains a low refractive index while significantly improving the hardness of the coated film. This clear from the comparative evidence presented in Tables 1 and 3 of the present specification. (Coating fluids L_1 - L_5 are within the scope of the present invention, while coating fluid L_6 is outside the scope of the present invention, because of the lack of the presence of a ureidoalkyltrialkoxysilane component.) Accordingly, there is a clear

distinction between the present invention as claimed and the coating composition disclosed in Nagomi et al.

It is noted on the record that Nagomi et al teaches the additional possible presence of a modifier (E) compound that is selected from the group of silane compounds disclosed in the paragraph bridging columns 4 and 5. These compounds are largely alkyltrialkoxysilane compounds but possible modifiers also include several glycidyloxypropyltrialkoxysilane compounds. No other significant additives are taught by the patent, and this includes no teaching of γ-ureidopropyltrimethoxysilane.

Further, with respect to the disclosure of Nogami et al, the Examiner states *that one of skill in the art is motivated by the patent to the arrive at the present invention since the composition disclosed by the patent lead one to expect enhanced adhesion to a substrate.* However, at this point, referring to the evidence of adhesion shown in Table 2 on page 32 of the specification, coating fluids (L_1 to L_5) which are within the scope of the present invention give adhesion values of 100/100, while coating fluid (L_6) which is that of a comparative example shows the same level of adhesion, i.e., 100/100. Thus, the ability to provide a motivation to improve adhesion as believed suggested by the reference does not exist.

The Examiner also refers to an improved (lengthened) pot life (stability) for the compositions disclosed by Nogami et al, thereby being expected to provide a motivation to expect improvements in this property by a combination of the two references. However, as the present specification states on page 9, lines 19-27 and as the Nogami et al patents holds (see the description at column 9, lines 42 to 45 of the patent), --*The polysiloxane solution to be used for forming the coating film of the present invention has stability durable for storage for about six months at room temperature and thus may be presented as an industrial product.* -- Thus, there is no substantive difference with respect to the property of improved

pot life or stability in either the present invention or the composition disclosed by Nogami et al.

As to Crompton, it also mentions that a benefit of using a compound having a ureido functional group of a longer pot life (stability) than aminosilanes in reactive polymer systems such as phenolic, epoxy, urea-melamine of polyurethane. Later, on page 2 of the product bulletin, it is stated that -- Silquest A-1524 silane is recommended for evaluation when inorganic surfaces such as fiberglass, particulate fillers or metal are combined or over-coated with phenolic, urea-melamine, epoxy resins, polyamide and/or polyurethane. -- This improved effect of longer pot life and adhesion is, however, specific to the application in which inorganic materials are applied to specific polymers. Accordingly, it is clear that the combined references do not lead the skilled artisan to the expectation of a composition, such as that now presently claimed, of superior.

Applicants also maintain that there is no suggestion in Crompton that the inclusion of the ureido compound, especially in small amounts, in a several silane component containing composition improves the hardness characteristic (abrasion resistance) of the product composition while maintaining a product of a low refractive index. In fact, Crompton only discloses the ureidosilane compound as useful in promoting adhesion between a wide range of resins and substrates, fillers or reinforcements. Neither Nogami et al nor Crompton reference provides the skilled artisan with any motivation to expect some advantage of incorporating the ureidosilane compound of Crompton in the composition of Nogami et al, especially when incorporated in small amounts in the composition of Nogami et al.

Further with respect to the matter of the presence of the ureidosilane compound as a component of the present composition, when a coated film of the present composition is formed on a substrate that has a refractive index which is higher than the refractive index of simply the coated film of the invention, such as a product of a hard coated TAC film or of a

product of a film coated glass substrate, it is quite easy to convert the substrate to an antireflective substrate. The coating material of the invention may also be employed as a coated upper layer that overlies a lower layer coated film that has a high refractive index.

Another aspect of the coating material of the invention pertains to the reflection of light. The expression $d = (2b-1)\lambda/4a$ is known, wherein b is an integer of at least 1. A determination of a thickness d (nm) of a coated film having a refractive index a and the wavelength λ (nm) of light can be made. In the instance where a decrease in the reflectance of a coated film is desired, by setting the thickness of a coated film using the expression given, it is readily possible to achieve the prevention of reflection from a glass surface of light having a center wavelength of 550 nm of visible light by utilizing a coated film having a refractive index of 1.32 with a coated film having a thickness of 104 nm obtained by substituting numerical values for λ and a in the given formula, or a coated film having a thickness of 312 nm that is obtained by substituting 2 for b. Accordingly, there is a panoply of property advantages that can be gained through the use of the coating film material of the invention. None of these advantages are suggested by the combined documents of the rejection, as these advantages are described on pages 10 and 11 of the specification. Withdrawal of the various rejections based on the combined references is respectfully requested.

Claims 4-6 stand rejected based on 35 USC 103(a) as obvious over Nogami et al, U. S. Patent 5,800,926 in view of Crompton OSi. This ground of rejection is respectfully traversed.

Applicants again state that the present process as claimed in Claims 4-6 is distinguished over Nogami et al by the fact that the patent, as pointed out above, does not disclose γ-ureidopropyltrimethoxysilane as a component of the of the organosilane material that is disclosed in the reference. This is a critical deficiency of the process, because the lack

of the γ-ureidopropyltrimethoxysilane component leads to a film product that does not have the desirable characteristic of the present product of a greater degree of hardness while not exhibiting a material increase in refractive index. This has been discussed at length above in the discussion of the prior art with respect to Claims 1-3.

Applicants also maintain that there is no suggestion in Crompton that the inclusion of the ureido compound, especially in small amounts, in a several silane component containing composition improves the hardness characteristic (abrasion resistance) of the product composition while maintaining a product of a low refractive index. In fact, Crompton only discloses the ureidosilane compound as useful in promoting adhesion between a wide range of resins and substrates, fillers or reinforcements. Neither Nogami et al nor Crompton reference provides the skilled artisan with any motivation to expect some advantage of incorporating the ureidosilane compound of Crompton in the composition of Nogami et al, especially when incorporated in small amounts in the composition of Nogami et al.

Claims 5 and 6 are patentable by virtue of their dependency on Claim 7.

Claims 7-9 stand rejected based on 35 USC 103(a) as obvious over Nogami et al, U. S. Patent 5,800,926 in view of Crompton OSi. This ground of rejection is respectfully traversed.

Claim 7 is directed to the aspect of the invention in which the organosilane composition is the coated film which results from the coating of a fluid containing the reactive components of the present organosilane composition. It is therefore clear that because Nogami et al does not disclose the four components of the present composition, when the composition is applied as a film to a supporting substrate, it does not result in a film having the greater hardness which the present film possesses while not exhibiting a substantive change in refractive index.

Claims 8 and 9 are patentable by virtue of their dependency on Claim 7.

Claims 10-12 stand rejected based on 35 USC 103(a) as obvious over Nogami et al, U. S. Patent 5,800,926 in view of Crompton OSi. This ground of rejection is respectfully traversed.

Claim 10 is directed to the aspect of the invention of preparing a coated film from the reactive organosilane mixture of the present invention. In fact, the procedural steps of forming the coated film of Claim 10 are substantially the same as the process steps of Claim 4. It is therefore clear that because Nogami et al does not disclose the four components of the present composition, when the composition is applied as a film to a supporting substrate, it does not result in a film having the greater hardness which the present film possesses while not exhibiting a substantive change in refractive index.

Claims 11 and 12 are patentable by virtue of their dependency on Claim 10.

Claims 13-15 stand rejected based on 35 USC 103(a) as obvious over Nogami et al, U. S. Patent 5,800,926 in view of Crompton OSi. This ground of rejection is respectfully traversed.

Claims 13-15 is directed to the aspect of the invention of preparing a coated film from the reactive organosilane mixture of the present invention, and in fact, Claim 13 is very similar to Claim 10, since Claim 10 is also directed to a several step process of preparing a coated film which includes a drying step and a curing step. However, Claim 13 is distinguished over Nogami et al because it does not disclose the four component mixture of the present composition. Further, when the composition is applied as a film to a supporting substrate, it does not result in a film having the greater hardness which the present film possesses while not exhibiting a substantive change in refractive index.

Claims 14 and 15 are patentable by virtue of their dependency on Claim 13.

Claims 1-3 stand rejected based on 35 USC 103(a) as obvious over Nogami et al, U. S. Patent 5,800,926 in view of Hayashi et al, U. S. Patent 6,800,330. This ground of rejection is respectfully traversed.

Applicants at the outset of the discussion, in fact, believe that the two references are not properly combinable because of the substantial differences in compositions disclosed and the ways in which the two formulations are used. At least the present invention and that described in Nogami et al are directed to a specific type of coating film material that is used in applications of coating substrates where light reflection (refraction) characteristics are important. Further, the three components of the liquid coating material disclosed in Nagomi et al are three of the four components of the presently claimed composition. As coating materials, the two compositions are used to provide appropriate substrates with coatings as disclosed, for instance, in Example 1 of each reference where a calcium fluoride substrate. The critical distinction, however, between the present invention and Nagomi et al is the presence of the ureidosilane compound in the present composition and the complete absence of the ureidosilane compound from the coating composition of the patent. On the other hand, Hayashi et al discloses a silicon based composition which provides for a silica-based coating film having low water absorption and a dielectric constant of 2.1 or lower. It is said to be useful as an interlayer insulating film material in semiconductors and other electrical devices. The composition of the reference is prepared by first combining Si compounds having formulas (1) to (3) as taught at the top of column 2 of the patent. Then, by hydrolysis and condensation, the three types of silicon compounds react to form a condensate referred to as (A). The condensation reactions form a product containing Si-O-Si bonds (col 2, lines 50-59). Upon the preparation of ingredient (A), the condensate is combined with component (B) which is a compound as stated at column 2, lines 24-26 and columns 11-13 of the text. The compound is one which is compatible with or dispersible in condensate (A) and has a boiling

point or decomposition temperature of 250 to 450° C. The combination of (A) and (B) is completed in the presence of organic solvent (C). Other optional components include colloidal silica, colloidal alumina, silane coupling agents, radical generators and triazene compounds (col 14, lines 1-5). Silane coupling agents are listed from the bottom of column 14 to column 15, line 25. Of the 26 specific compounds mentioned, only two are ureidosilane compounds (col 15, lines 31-32). Accordingly, Hayashi et al teaches that if one or more coupling agents is (are) employed to form the product and if one happens to choose one of the two ureidosilane compounds shown in lines 11 and 12 of column 15 instead of any one of the other 24 equivalent coupling agents disclosed (There is no teaching anywhere in the reference of preferably using one of the two ureidosilane compounds as the coupling agent.), the result, nevertheless, is a composition that is quite substantially different from the relatively simpler three component composition of Nagomi et al. It is simply not seen how the teaching of a coupling agent for possible use with a silicone hyrolyzate (condensate) in Hayashi et al is in any way relevant to the composition taught by Nagomi et al, which, as seen above, is used in an entirely different way as a coating film than the silica based coating film of Hayashi et al.

Applicants also do not concur with the Examiner's statement at the bottom of page 9 of the Office Action that the ureidosilane compounds are taught as functional equivalents as coupling agents/adhesion promoters. Bear in mind that the use of the ureidosilane component in the present composition is particularly manifested by the relative hardness of a coated substrate material obtained while maintaining a low refractive index and not to an improved adhesion.

Claims 4-6 stand rejected based on 35 USC 103(a) as obvious over Nogami et al, U. S. Patent 5,800,926 in view of Hayashi et al, U. S. Patent 6,800,330. This ground of rejection is respectfully traversed.

Applicants traverse the rejection of Claims 4-6 for the same reasons as they have traversed the rejection of Claims 1-3. Applicants steadfastly maintain that Hayashi et al does not overcome the deficiencies of Nagomi et al. Hayashi et al discloses an organosilane based composition for the preparation of films. However, for the reasons stated above, the very limited teaching of two ureidosilane compounds as possible coupling agents does not suggest the use of a reactant in the composition disclosed by Nagomi et al for the purpose the ureidosilane component serves in the present invention. Thus, the combined references do not obviate the invention claimed in Claims 4-6.

As to the remaining three grounds of rejection of the groupings of Claims 7-9, Claims 10-12 and 13-15 based on 35 USC 103(a) as obvious over Nogami et al, U. S. Patent 5,800,926 in view of Hayashi et al, U. S. Patent 6,800,330, applicants' position as stated with respect to the disclosures of the patents remain the same. The combined references do not lead the skilled artisan to the addition of an extraneous organosilane material (ureidosilane) to arrive at a product of reaction which, as a film, exhibits improved hardness while not resulting in any material change in low refractive indexes for such condensed organosilanes. Withdrawal of the rejection is respectfully traversed.

It is now believed that the application is in proper condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,

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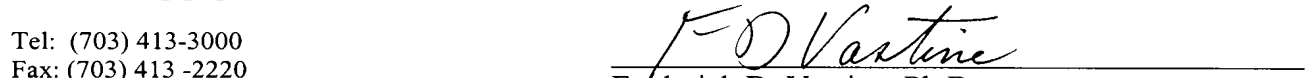

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